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AUTHOR Halonen, Jane S.
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ABSTRACT

This paper outlines seven assumptions about teaching conditions that best facilitate critical thinking in the undergraduate psychology curriculum; the main ideas proposed in a model of critical thinking developed by a network of psychologists across the nation; and the application of this critical thinking model to the undergraduate curriculum. Beginning with students' "knowledge bases" (facts, beliefs, assumptions, and values), the model is based on tension-reduction theories in which the restoration of a sense of balance is the core idea. Once critical thinking is engaged, a student is likely to go through the following identifiable stages in the resolution of discrepancy: (1) motivating factors, involving whether or not the student is alert, engaged, and willing to take risks; (2) information-seeking skills, involving ways in which the student organizes information; (3) information-relating skills, in which students make connections between original discrepancies and other ideas, culminating in the construction of a revised, tentative, personal theory; (4) an evaluation phase, in which students purposefully examine their personal theories to determine the adequacy or sufficiency of their resolution; (5) an expressing phase in which students put forth their new position for external feedback; and (6) the integrating phase, resulting when external feedback is supportive and students both revise their personal theories and expand their knowledge bases. Following the evaluation of the implementation of this model at Alverno College in Milwaukee, Wisconsin, insights about the various components of the model, including remaining discrepancies are presented. A sample assignment is appended. (LH)

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CRITICAL THINKING THROUGHOUT THE UNDERGRADUATE PSYCHOLOGY CURRICULUM

by

Jane S. Halonen

October 1985

Paper presented at the Mid-America Conference for Teachers of Psychology (2nd, Indiana, October 1985).

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Critical Thinking throughout the Undergraduate Psychology Curriculum

Jane S. Halonen

Alverno College

The increasing national interest in critical thinking in college is somewhat puzzling. Educator Stuart Rankin (1984) reflected at a recent Winnspread conference on critical thinking that the academic uproar about critical thinking was rather like a group of clergy getting together to discuss whether or not morality was an important issue. Isn't the development of thinking skill the whole purpose of education? Although developing students' critical thinking skills appears to be a growing national priority, psychologists have had a long history of exploring the relationship between thinking skills and their discipline (Glaser, 1984).

My own interest in critical thinking is derived from two sources. First, I just completed a three year effort with nine other psychologists from across the country to develop some ideas about what it means to teach critical thinking in the context of psychology. Our work was underwritten by a grant from the Fund for Improvement of Post-Secondary Education (FIPSE) and hosted by Alverno College. The Psychology FIPSE Network spent one hectic week in each summer of 1983 and 1984 constructing a model of critical thinking in psychology. A manuscript describing the effort and the insights gained from the work has just

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been completed. The first portion of the presentation will describe the main ideas proposed in the FIPSE model.

A second source of my interest in critical thinking comes from the enthusiasm about research in teaching from my home institution, Alverno College. The faculty members at Alverno have spent the last fifteen years pursuing the definition of behavioral outcomes of a liberal arts education and developing strategies to enhance student thinking. In trying to define these educational outcomes specific to psychology and in applying the ideas derived from the FIPSE model, Alverno's Psychology Department has produced some observations about teaching critical thinking across the psychology curriculum which serves as the primary objective of this discussion.

Assumptions about Teaching Critical Thinking

When we focus on the teaching conditions that facilitate critical thinking, a few assumptions must be made:

1. We do not need to have an all-encompassing definition of critical thinking in order to proceed with teaching these skills. In our FIPSE network, we agreed not to surrender to the academic impulse to construct a perfect definition before we allowed ourselves to pursue strategies to develop specific aspects of critical thinking.
2. Expecting students to think critically and teaching students to think critically are not the same thing. Arons (1979) believes we have implicit expectations about the

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reasoning capacities of our students. However, we may be reluctant to accept responsibilty for teaching these skills.

3. Good teachers tend to induce critical thinking naturally in their students; teachers who adopt the objective of fostering critical thinking skills proceed more intentionally and explicitly to assist students to understand what they have accomplished.

4. Critical thinking can be analyzed into observable units that can be explicitly identified. Teaching design can foster these outcomes.

5. There is no one specific way to teach critical thinking skills. A curriculum that allows for multiple opportunities to practice thinking skills is likely to be more effective in promoting transfer of skill than specific thinking courses that may not be linked to any particular discipline.

6. Emphasizing critical thinking skills in the context of a discipline-based course switches the focus of effort from content-oriented learning to student-centered learning. Critical thinking activities, tailored to student development, will enhance the meaningfulness of course content which has been linked to increased student retention (Ericksen, 1983).

7. Time in the course needs to be devoted to the modeling and practice of critical thinking skills and to feedback about student performance. As academics, we have developed a preoccupation in most courses with attempting to cover as much of the disciplinary area in the course as the constraints of the semester or quarter will allow. Ericksen

describes this tendency to expose students to the light of knowledge by covering as many ideas as possible as the "sunburn theory of instruction." It is inadequate. It creates discomfort. And its effects are temporary.

8. Teaching critical thinking skills requires us to think critically about the concepts we present. As such, a critical thinking emphasis serves as an incentive to add life to our subject matter.

The FIPSE Critical Thinking Model

The critical thinking model begins with the experience of the student. As depicted in Figure 1, students enter

Insert Figure 1 about here

our classrooms with their own individual Knowledge Bases, comprised of their experiences, facts, assumptions, beliefs, and values. The Knowledge Base is a unique representation of all the "data" the student can draw upon to make sense of the events in their lives. They have also constructed individual explanations--Personal Theories--to explain and understand specific events. When a student is confronted with an External Event that cannot be readily explained by an existing Personal Theory, critical thinking may be initiated. When the External Event is sufficiently discrepant from their own perspectives, students engage in critical thinking to reduce the tension created by the ill-fit.

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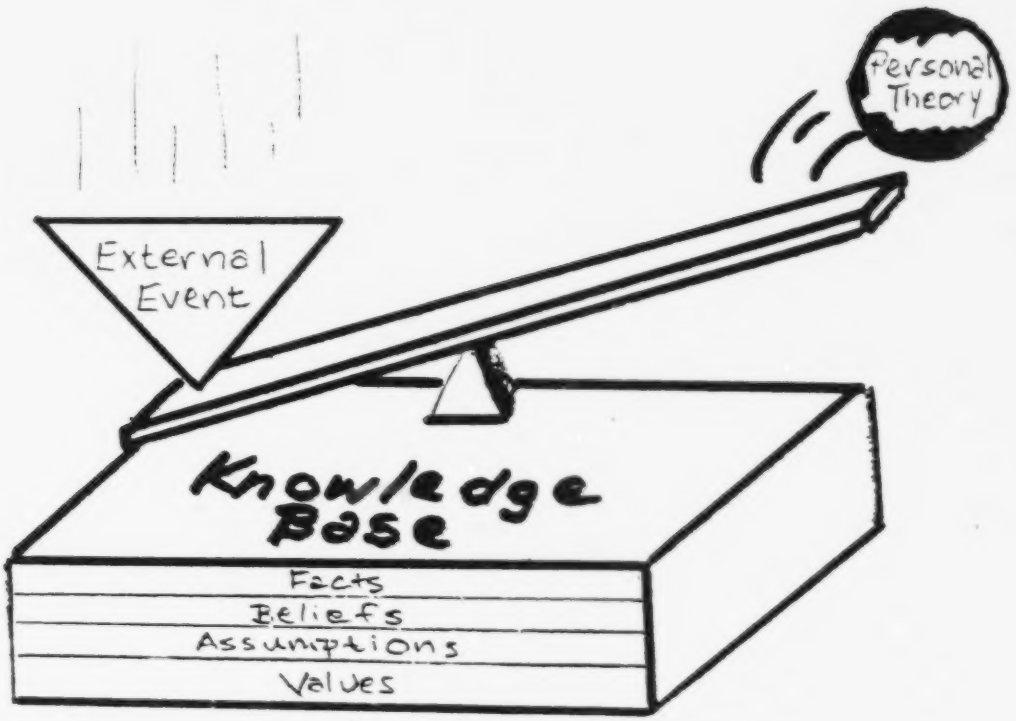
Personal Theory
External Event
Knowledge Base
Facts
Beliefs
Assumptions
Values

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There are many academic precedents for the tension-reduction model. Perhaps the closest formulation is Piaget's (1962) concept of "disequilibrium," a term he used to describe how children learn through accommodation. When they attempt to adapt to the environment with practiced ways and are unsuccessful, they must make some changes in their approach to succeed. Although the critical thinking model addresses more abstract and complex behavior, the restoration of a sense of balance is the core idea involved in both approaches.

Once critical thinking is engaged, a student is likely to go through identifiable stages in the resolution of Discrepancy as shown in Figure 2 and elaborated in Figure 3.

Insert Figures 2 and 3 about here

The model presents critical thinking as a tidy, cyclic process, however, each act of critical thinking may involve going through the process several times before any given Discrepancy is resolved. The process can take a few seconds or a few years to complete, depending on the original Discrepancy being addresssed.

Motivating factors involve whether or not the student is alert and engageable. If students are emotionally overwhelmed or too tired, they simply will be less able to expend the energy required in grappling with Discrepancies.

Information-Seeking skills focus on what kind of information students absorb initially and how they organize

MOTIVATING → INFORMATION-SEEKING → INFORMATION-RELATING → EVALUATING → EXPRESSING → INTEGRATING

Orients

Expends Energy

Shows Curiosity

Balances Affect

Takes Risks

Attends
- Listens
- Observes

Understands Concepts

Identifies Discrepancy

Organizes Knowledge

Knows, Uses Resources

Makes Links

Identifies Patterns

Thinks Convergently

Infers Logically

Asks Questions

Applies Knowledge

Thinks Divergently

Tentatively Resolves DISCREPANCY
- --Solves Problem
- --Makes Decision
- --Reaches Compromise

Evaluates PRODUCT for
- --Relevance
- --Accuracy
- --Sufficiency
- --Quality

Evaluates PROCESS to Develop Conscious Use ..... of Metacognitive Strategies

knows what one doesn't know
tolerates ambiguity
identifies assumptions
asssumes complex causes of behavior
maintains skeptical stance
assumes perspective of another
adopts multiple perspectives
maintains internal locus of control
separates objective from subjective
reflects purposefully on experience
manages time efficiently
selects proper work mode

Puts Position Forward for Criticism

Assessment Based on External Standards

Resolves DISCREPANCY

Expands KNOWLEDGE BASE

Revises PERSONAL THEORY

input for analysis. The networkers regarded these skills as more "generic" thinking abilities.

Information-Relating skills explore the connections students can make between the original Discrepancy and other ideas. New relationships can be drawn from their own knowledge bases or the pursuit of different ideas outside themselves might be required. This area also includes specific kinds of analytic abilities. Can students break the problem into smaller units? Can they come up with new and creative connections? Ultimately, the end of this phase involves the construction of a revised, tentative Personal Theory.

In the Evaluating phase, students purposefully examine their Personal Theories to determine the adequacy or sufficiency of their resolutions. For beginning students, the idea of examining the revised Personal Theory to find out how well it bridges the gap of the Discrepancy may seem unnatural and awkward. They are unaccustomed to thinking in terms of using criteria to make evaluative judgments. As students develop their skills, the Evaluating phase becomes more intentional. An important aspect of this phase is what we call "metacognitive strategies," i.e., thinking about thinking. Studying psychology seems to foster particular kinds of metacognitive skills which are listed in Figure 3.

In the Expressing phase students put forth their new positions for external feedback. In classes this expression may take the form of a comment during class or more extensively in written compositions or speeches in which the

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students present positions. As professional critics, we evaluate the quality of their thinking and formally acknowledge their level of achievement through grades or specific feedback.

If external feedback is supportive, students will revise their former Personal Theories and at the same time expand their knowledge bases, representing the Integrating phase of the cycle. Students may also conclude that their new positions are still inadequate--often prompted by external feedback--and return to an earlier phase of critical thinking for more work.

That is the basis of the model in critical thinking. In its expanded form it provides some sense of guidance for the activities we require of our students and also begins to make these behaviorally explicit. However, the complexity and comprehensiveness of the model should not distract from the primary features of the model that promote successful critical thinking in the classroom--well-designed Discrepancy, time in which to practice thinking critically, and specific feedback about the degree of success achieved.

Applying the Model Across the Psychology Curriculum

Two members of the original ten-member FIPSE network in psychology were from Alverno College. We committed ourselves to trying to evaluate our own curriculum from the perspective of the critical thinking model. As such, we were able to derive some insights about the undergraduate as a developing critical thinker in the context of psychology.

The insights are presented in connection with various components of the model.

External Event. The way in which we design classroom activities should be geared to the level of sophistication of the students in the class if the activities are to be effective in eliciting critical thinking. Perry's (1970) speculations about the changes that occur in students over the course of the college experience seemed to make an ideal link to the practical suggestions we were developing. Students initially demonstrate a pattern that Perry described as "dualistic," characterized by a need to produce absolute judgments and to rely on authority. Their corresponding Personal Theories are likely to be dense, undifferentiated, and simplistic. The External Event that may be needed to spur critical thinking might have to be very compelling or intrinsically interesting. As students' abilities develop, they become more "relativistic" in their thinking and should be able to handle increasingly subtle Discrepancies without the more obvious manipulation of the teacher. The developmental relationship between External Event and Personal Theory is illustrated in Figure 4.

Insert Figure 4 about here

A metaphor may clarify the process. For freshman critical thinkers, we may need to provide an external stimulus that has enormous and obvious "holes" so that critical thinking can be easily engaged. With increasing success, the "holes"

PERSONAL THEORY

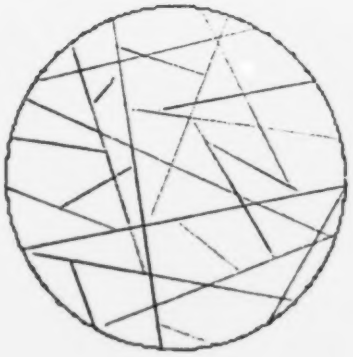
beginning...

simplistic
undifferentiated
absolute

developing...

expanded
porous
complex

advanced...



multiplistic
tentative
contingent

over time

The Psychology Network from Alverno College Incorporating Perry Developmental Levels in FIPSE Critical Thinking Model

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in any given stimulus can be made smaller. A practical example will illustrate how adopting developmental expectations about critical thinking would influence how experimental methodology could be taught.

In introductory courses we might try to teach basic ideas about experimental design by describing "classic" experiments in psychology. We might even be tempted to ask students to evaluate these experiments. Routinely we find little success with this approach because freshmen are struggling with understanding concepts. Instead, we might encourage students to learn design principles by presenting them with very badly designed studies where the errors are glaring. Subsequent experiments with less obvious design problems can then be more successfully introduced. Adopting the shaping approach may lead to rapid subtlety in analysis even within the span of one course. One networker who used the "poor methodology" approach presented a partial explanation of one of her own experiments to her introductory students who enthusiastically produced over 20 criticisms that accurately reflected understanding of experimental design procedures.

Motivating. One significant component of this phase of critical thinking is the ability to take risks. Particularly at the start of classes, freshmen may have a tendency to "coast" before taking the risk of making individual contributions. The social tension of a beginning class provides an ideal context in which to introduce an exercise that targets encouraging freshmen to take risks.

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The exercise was originally described by William Hunter (1982), who reorganized the typical sequence of topics in introductory psychology to take advantage of the normlessness of a new class for freshmen.

In the exercise, the instructor begins class by issuing some commands that fit with the start of a new class (e.g., "Please sit here. Put your books on the floor."). As compliance occurs, the commands become increasingly discrepant from expectations about normal college student behavior ("Please take your notes in pencil today. Take your rings off and hold them in your lap..."). Compliance continues for the most part, but facial expressions suggest students are beginning to register their identification of Discrepancy. The commands increase in ridiculousness. Finally, the orders strain credibilty entirely ("Stick two fingers up your nose and quack like a duck.") Given the proper sequence of commands, all students are successful in the taking the risk of disobedying authority. The experience sets the stage for examining their judgments and attributions as linked to the content area of social psychology and can be expanded to explore their beliefs about the student role in the classroom.

In the former example, the discrepancy was quite compelling. In working with advanced students where interest in the subject matter is more predictable, we may not need to be so provocative to motivate risk-taking. An example from a seminar in Clinical Psychology illustrates the difference. When students are beginning to learn

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counseling skills. they are often concerned about saying the wrong thing. An introductory role-play asks them to behave as the worst counselor they can imagine. The risk is reduced in this exercise because it is hard to fail at being bad. The exercise also allows students to express their fears about their own inadequacy as they prepare for more serious simulations. There is a great deal of comfort taken in the conclusion that they can never be as bad as they are in the beginning exercise.

Information-Seeking and Information-Relating.

Beginning students are very limited in their ability to see the organization that we take for granted in a lecture or in a text. When we examine a passage of material related to psychology, we can readily analyze the work into its component parts, sorting concept from concept and example from example. Beginning students do not have this facility. They tend to regard a text as so many words that must be memorized in order to pass an exam rather than to approach the material in a more active way to promote learning. With diminished capacity to organize input, students may have little time to think about the concepts and personalize them in a way that makes learning more meaningful.

As part of our curriculum review, we began to notice patterns that emerged in the organizational skill of our students. The progression of the organization we observed is outlined in Figure 5. Initially students who are

Insert Figure 5 about here

Concept Recognition

Concept Bombing

Theory Recognition

Theory Bombing

Theory Evaluation

Theory Building

Levels of Sophistication
in Using
Conceptual "Organizers"

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beginning their studies in psychology often feel bombarded by new behavioral concepts. As they adjust to more intensive study demands, they begin to recognize concepts as a way of organizing experience about behavior; behavioral concepts serve as shorthand to communicate patterns of behavior. They begin to recognize these patterns as they occur (Concept Recognition) and they begin to link relevant concepts to explain other behaviors (Concept Bombing). We began to use "concept bombing" as a legitimate behavioral outcome for student work at the introductory levels and arranged experiences that would encourage such behavior. For example, "What are all the concepts you can think of that might be related to the 'tip-of-the-tongue' phenomenon?"

In intermediate levels we wanted students to be able to understand the structure and use of theory and again organized our coursework around theory recognition and theory bombing. An example might be derived in an Abnormal Psychology class. How would Freud explain antisocial behavior? How would Skinner? How would Thomas Szasz? We allude to evaluating theory and describe and model how that might be done but it may not be an explicit demand at the intermediate level.

In advanced levels we believe students have the analytic skills to use the "organizers" of psychology in a more sophisticated way. In their Senior Seminar course, for example, they must explain a behavior theoretically and

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commit to the best explanation they were able to derive from relevant theories. Although we do not set theory-building as an explicit outcome, many students make this transition, even as undergraduates, facilitated by their abilities in using the organizational, conceptual structures of psychology more purposefully.

Evaluating. We recognize how premature it is for freshmen to evaluate the quality of their own thinking and we don't demand this skill from them in introductory coursework. We begin to teach for Evaluating skills in the intermediate level. Even so, students may often respond to inquiries about the adequacy of their position with a comment, such as, "It's a good answer, because I came up with something." More advanced students respond favorably to being given time and credit for careful evaluation of their ideas. By the time our students have advanced in their studies we make much greater metacognitive demands of the way in which they evaluate their work.

An example of how such an approach might be reflected in coursework would be to establish essay questions as routinely two-part. First, students should answer the question you have designed. Second, they should be required to justify whether or not the answer is "good." This approach is enhanced when a question may involve an issue that is unsettled in the discipline. For instance, Abnormal psychology students were asked after studying various theoretical approaches to schizophrenia to explain a finding (Lewis + Griffin, 1981) that relates increased risk of

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schizophrenia to being born in the winter months. Most students are intrigued with the number of ideas they can produce, particularly when the are warned ahead of time about the nature of the demand. However, in response to this demand, one student angrily claimed that she wasn't to be "fooled." She would do some research on the topic to find the right answer!

Expressing. The two aspects of the cycle of critical thinking over which we have the most control are the design of the external event and the nature of feedback we provide. We have begun to treat our External Events as experimental. We estimate what skills we think will be apparent in any given project and share them as criteria with students to direct their thinking. The criteria are regarded as "in process," and we alter the criteria as student performance contributes to our fuller appreciation of skills addressed. Such specific criteria not only answer the nagging student question, "What do you want?" but they assist students in identifying the process of critical thinking. As students progress in their work, we may ask them to design their own criteria for evaluation as a way of enhancing their metacognitive abilities.

An example of such an External Event is appended to the paper. The idea was designed for a liberal arts course that contrasts methods in the natural and behavioral sciences. In preparation for the task, students read the chapter on "Physical Evidence" in Nonreactive measures in the social sciences (Webb, Campbell, Schwartz, Sechrest, & Grove,

1981). Each student is asked to assume the identity of Sherlock Holmes and to visit an environment in which the student functions. "Sherlock" is asked to write a letter to Dr. Watson in which he expresses whether or not he wants to meet the inhabitant (and why) on the basis of inference about physical evidence. The Discrepancy in the exercise involves the restriction students must follow in discussing who they are from only hints implied by evidence in the environment. The criteria serve as basic guidelines for performance, not a blueprint. Performance in such a task is generally enthusiastic because the task is so personally involving. The exercise also readily exposes basic errors in analytic skills. The example illustrates how content and process can be balanced for improved learning experiences.

Some Closing Discrepancies

The networkers were impressed by the impact our own theory-building had on our approach to teaching. We began to search for opportunities to create Discrepancies that would enhance learning and promote critical thinking. We also felt increased comfort in using Discrepancies that occurred spontaneously in the classroom in support of critical thinking objectives. Yet we are aware of how much we still do not know about critical thinking in psychology classroom. A number of Discrepancies remain:

1. How do we promote critical thinking without having a sense of sacrificing important content?

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2. Are there "core" concepts in psychology that would assist us in content/process decisions?

3. Students often complain about having to work harder in classes devoted to critical thinking ("not that thinking stuff again..."). How do we pursue critical thinking objectives when students respond unfavorably to increased thinking demands.

4. How do we evaluate the variation in critical thinking in relation to grades?

5. Are there more effective ways to create motivation to think critically than with the threat of poor grades?

6. Would students benefit if we teach them the model? How could we do so in the spirit of the model itself so they wouldn't simply memorize the stages?

7. Pursuing critical thinking objectives implies a potential for loss of structure and control in the classroom. Can we trust our own abilities to use these experiences to best advantage?

8. Students who become more effective critical thinkers are more likely to turn criticism back on us? Can we bear being confirmed as imperfect?

Cole (1982) discussed the value of undergraduate study of psychology not in the accumulation of content about behavior, but in the growth of attitude about what is known. He states that the study of psychology can "liberate (us) from arrogance of believing we know more about ourselves and others than we really do" (p. 25). This observation becomes an objective for instructors who promote critical thinking

as an outcome for students, and the critical thinking model can be used to support this mission.

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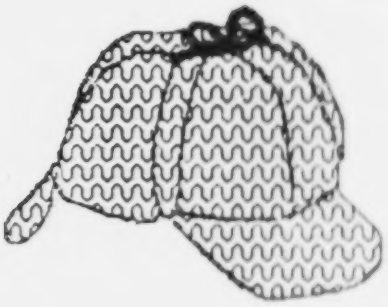
LA 282
Spring, 1985
Assignment #2



Sherlock Holmes has been looking for you.

Because you are such a busy woman, he has not yet succeeded in meeting with you personally. However, in his quest to meet you he has been able to scrutinize one of the environments where you can normally be found. He has concluded from his evaluation of the physical evidence that you would be an interesting woman indeed.

Your task is to write a letter to Dr. Watson from Sherlock Holmes. In this letter Holmes will describe why he is so anxious to meet you based on what he has learned about you from your environment.

Criteria: Have you ..

___ used (minimum) Level 3 writing criteria?
___ accurately described physical evidence? (Analysis-L1)
___ logically inferred from evidence? (Analysis-L2)
___ identified personal values from evidence? (Valuing-L1)
___ described evidence from multiple perspectives? (Environment-L1)
___ inferred the influence of human behavior on the environment? (Environment-L2)
___ demonstrated your learning of Webb's Nonreactive Measures?